REMARKS

Status of the Claims

Claims 1-7, 13, 14, and 17-23 are pending and were rejected. No claim amendments are being made at this time.

The sole rejection is an obviousness rejection based on John, et al., *J. Clinical Endocrinology & Metabolism*, 84(11), pg. 4287-90 (1999) in view of Hutchison, et al. (WO 03/003986). Just as a point of information, the applicant is one of the named authors on the John publication. The Applicant has carefully considered the grounds for the rejection, and respectfully traverses the rejection for the following reasons.

Rejection under 35 U.S.C. § 103

According to the Examiner, John discloses that a particular S-IRMA assay that uses a radiolabeled antibody showed that binding of PTH(1-84) was reduced by hPHT(1-34) peptide, but not by hPTH(2-34) peptide. The Examiner interpreted this to say the S-IRMA antibody is "a specific amino acid residue dependent antibody, which targets PTH." However, the Examiner noted that this reference does not describe the steps of making such an antibody: "John et al. do not teach immunizing a mammal with an immunizing protein or peptide comprising target protein or peptide or purifying an antibody from a mixture of antibodies." The second reference, Hutchison, allegedly provides these additional elements. Thus the Examiner concludes that "It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify a method of identifying a specific amino acid residue dependent antibody to target PTH as taught by John, et al, by immunizing a mammal with an immunizing PTH peptide and purifying a PTH antibody from a mixture of antibodies, as taught by Hutchison with a reasonable expectation of success. The motivation and expected success is provided by the general knowledge to one of skill in the art that antibodies are made by immunizing a mammal (with a specific peptide) and then must be purified from a mixture of antibodies (i.e., sera)."

A rejection based on 35 U.S.C. 103 requires the Office to show that the prior art discloses all elements of the claim; that a person of ordinary skill would have been motivated to modify or combine references to arrive at the invention as claimed; and that the person of ordinary skill would have had a reasonable expectation of success when doing so.

Claim 1 is reproduced here for convenient reference. Specific limitations discussed below are underlined for emphasis:

> 1. (Currently Amended) A method for identifying a specific amino acid residue dependent antibody to a target protein or peptide, which method comprises:
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> a) providing an antibody that binds to a target protein or peptide containing a specific amino acid residue;
> b) contacting said antibody provided in step a) with a negative screening protein or peptide comprising said target protein or peptide wherein said specific amino acid residue is lacking or unavailable for binding with said antibody; and
> c) assessing binding between said antibody and said target protein or peptide and assessing binding between said antibody and said negative screening protein or peptide, whereby identifying an antibody that binds to said target protein or peptide, but fails to bind to said negative screening protein or peptide, as a specific amino acid residue dependent antibody;
>
> wherein said target protein or peptide comprises PTH(1-34) and said negative screening protein or peptide comprises PTH(2-34) and lacks the first amino acid residue of PTH, and said specific amino acid residue is the first amino acid residue of PTH.

First, John does not describe a method for identifying the S-IRMA antibody it discusses, only some of the antibody's characteristics. Unlike an anticipation rejection, where the characteristics of the S-IRMA antibody might be relevant, the properties of that antibody are not relevant to the obviousness analysis unless they provide a reason to identify the antibody according to the present claims. Since John relates only to selectivity of antibodies for PTH(1-84), it does not do that. The S-IRMA antibody is a composition; its properties have nothing to do with the method claims that are at issue here. A composition does not render obvious all methods for its preparation; and in this case, the references do not disclose that the antibody discussed in the rejection has the

properties of an antibody according to claim 1, nor were they shown to provide motivation to pursue such an antibody.

John appears to use PTH(1-34) and PTH(2-34) solely as tests of how they affect binding between the S-IRMA antibody and PTH(1-84): that does not disclose or suggest an antibody according to the claim, and it does not provide motivation for a person of ordinary skill to identify such an antibody by the method of the claims. Even if the S-IRMA antibody had the properties of the antibody identified by the claimed method, that would not disclose or suggest the claimed method, especially since the references were not shown to provide a reason to identify the antibody that claim 1 relates to.

Claim 1 is directed to a method for identifying an antibody that is selective for PTH(1-34) over PTH(2-34). As emphasized above, claim 1 requires a user to perform a step of "assessing binding between said antibody and said target protein or peptide and assessing binding between said antibody and said negative screening protein or peptide." The cited references do not disclose this step. Even if the S-IRMA antibody was contacted with PTH(1-34) and PTH(2-34), it was not done to assess the binding of the antibody to PTH(1-34) or PTH(2-34), only to assess whether those peptides interfere with the S-IRMA antibody's binding interactions with PTH(1-84). From this, a person of ordinary skill would not have a reason to assess the binding of an antibody to the peptides in claim 1.

John relates to the evaluation of antibody-based assays intended to detect PTH in biological samples, and compares how well they distinguish full-length human PTH(1-84) from N-terminally truncated variants of it. See title and abstract. John describes a PTH assay system referred to as S-IRMA that operates by forming a sandwich complex with PTH(1-84), and characterizes the assay system according to how other added peptides affect the formation of that sandwich complex. The passage that the rejection relies upon merely says, "the S-IRMA antibody binding was reduced by hPTH(1-34), but not by hPTH(2-34)." It does not describe assessing the binding of the S-IRMA antibody to PTH(1-34), or assessing the binding of an antibody to PTH(2-34), only the binding of an antibody to PTH (1-84) and how/whether that binding is affected by the

presence of other peptides. John appears at most to assess the binding of the S-IRMA antibody to PTH(1-84), and how that is or is not affected by other peptides that could interfere. The claims require one to assess binding of an antibody to both PTH(1-34) and PTH(2-34) peptides. John does not assess the binding of an antibody to those two peptides as required by the claimed method, since the assay John uses is designed to form a sandwich complex that apparently depends on the C-terminal portion of PTH. (Note that if the sandwich assay detected the PTH(1-34) and/or PTH(2-34) that was added in the competition experiments, they would increase the amount of radiolabeled complex formed rather than reducing it by interfering.) So the S-IRMA assay is not assessing either PTH(1-34) or PTH(2-34) binding to the S-IRMA antibody. Thus John fails to disclose or suggest this step of the claimed method. The rejection does not indicate how Hutchison might address this deficiency.

A proper obviousness rejection requires the references to disclose or suggest all features of the claim. Neither John nor Hutchison discloses a reason to identify an antibody having a PTH(1-34) peptide as its target, with selectivity over a PTH(2-34) peptide. Neither John nor Hutchison discloses or suggests identifying an antibody by using a step of assessing the binding of the antibody to PTH(1-34) and assessing the binding of the antibody to PTH(2-34). Moreover, neither of the two references was shown to provide motivation to identify an antibody having the characteristics required by the antibody that claim 1 seeks to identify, since they do not provide a reason to produce such an antibody. Claim 17 is directed to a method that is designed to provide an antibody that targets PTH(1-34) without binding to PTH(2-34). Since the references do not provide motivation for one of ordinary skill to pursue that antibody, this method claim is also not rendered obvious by the cited refereces. Accordingly, the methods of independent claims 1 and 17 are not rendered obvious by the cited references.

In view of the above remarks, the obviousness rejection of the pending claims is believed to be overcome. Reconsideration in view of these remarks, and withdrawal of the rejection are respectfully.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no.*. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

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